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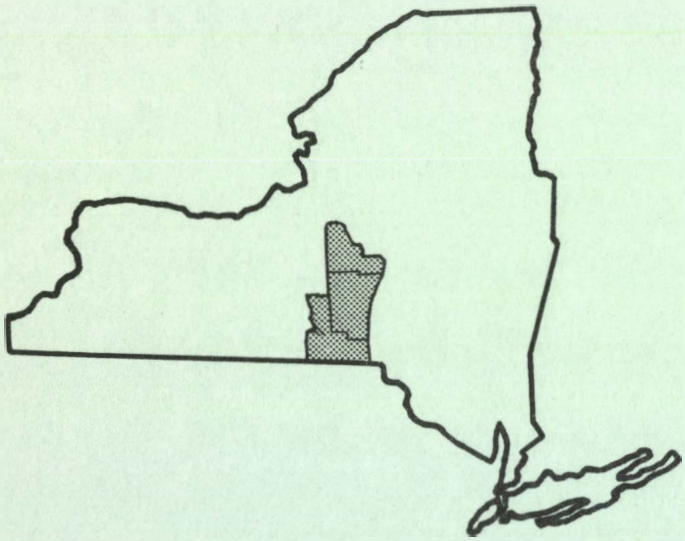
Forest Statistics for

NEW YORK

Forest District No. 2



Forest Statistics Series:
New York No. 4

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania
Ralph W. Marquis, Director

1954

United States Department of Agriculture • Forest Service

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FOREWORD

This is the fourth in a series of reports about forest areas and timber volumes in the State of New York. These reports are products of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the nationwide forest survey being made by the Forest Service, U. S. Department of Agriculture.

A similar report has been prepared for each of the other forest districts in the State of New York. The primary purpose of these reports is to provide basic forest statistics for the administrative use of the New York Department of Conservation.

The New York Department of Conservation aided the Northeastern Station greatly in the forest survey of the State. The Department not only provided the aerial photographs used in the survey, but also cooperated in many other phases of the work.

Field work in Forest District No. 2 was supervised by Harry W. Camp, Jr. The statistical procedures for obtaining field-inventory data were developed by C. Allen Bickford. Computations were made under the supervision of Roland H. Ferguson.

Ralph W. Marquis

Ralph W. Marquis
Director

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FOREST STATISTICS FOR NEW YORK FOREST DISTRICT NO. 2

Prepared by

Division of Forest Economics

Northeastern Forest Experiment Station
Forest Service, U.S. Dept. Agriculture

GENERAL

Forest District No. 2 is located in south-central New York. Three counties are included in this District: Broome, Chenango, and Madison.

The topography in Madison County, adjacent to Oneida Lake, is flat to gently rolling, with steeper slopes farther south. Chenango and Broome Counties are characterized by deep valleys, steep side walls, and broad, undulating ridge tops. Nearly 85 percent of the commercial forest land drains into the Susquehanna River; the rest is drained by the Delaware River and Lake Ontario tributaries.

The District is predominantly agricultural. Dairy products, tree fruits, grapes, and vegetables are the most important products. Most of the industrial activity is in the vicinity of Binghamton, which is an important rail center. Endicott is well known for shoe manufacturing.

Forest Area

Forest District No. 2 has a total land area of nearly 1,500,000 acres. The forest-land area is 512,000 acres. Almost all of the forest land is classed as commercial,

since less than 1 percent is reserved from timber cutting. There is little or no land that is considered incapable of producing a timber crop.

Chenango County, the largest, has 43 percent of the total commercial forest land, Broome County 35 percent, and Madison County 22 percent.

Ownership

Nearly 80 percent of the commercial forest land is privately owned. Farmers own 56 percent and other private owners 44 percent.

Of the forest land in public ownership, about 95 percent is held by the New York State Conservation Department. Most of this is in State Forests[1] and Game Management Areas. County and municipal ownerships and Federal holdings are about equally divided.

Forest Types

The sugar maple-beech-yellow birch type occupies 54 percent of the commercial forest land; and oak types, principally red oak and oak-white pine, about 13 percent. These types are generally found at the higher elevations. About 10 percent of the forest area bears other hardwood types. Of this, a little more than one-half is in the ash-elm-maple type commonly found along streams. The remainder is in the aspen type, and its presence may indicate past misuse of the land.

The principal softwood types are white pine and hemlock. More common at the lower elevations and on moister sites, white pine covers about 11 percent of the forest land and hemlock about 8 percent. Other softwood types occur on only 4 percent.

Forest Stands

About 33 percent of the commercial forest land bears sawtimber stands of more than 1,500 board feet per acre. Stands of more than 5,000 board feet per acre occur on less

[1] OUTSIDE THE LIMITS OF THE ADIRONDACK AND CATSKILL PARKS AND NOT SUBJECT TO THE CONSTITUTIONAL PROHIBITION AGAINST CUTTING WHICH APPLIES TO THE STATE FOREST PRESERVE LANDS.

than 9 percent of the forest land but carry more than one-third of the total board-foot volume.

Poletimber stands occupy 46 percent of the commercial forest land. There are some 108,700 acres of seedling-and-sapling stands and nonstocked areas (21 percent of the forest-land area). This acreage is now supporting little if any growing stock.

Timber Volume

The commercial forests of this District contain 809 million board feet (log scale, International ¼-inch rule) of live sawtimber. About 52 percent of the total board-foot volume is in sugar maple, beech, and hemlock. Sugar maple alone accounts for one-fourth of the total volume.

The growing stock amounts to 373 million cubic feet. Of this, 172 million are in sawtimber trees and 201 million in poletimber trees. The total cubic volume is equivalent to about 4.7 million rough standard cords.

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Table 1.--Land area by major classes, 1950

Class of land[1]	Area	
	Acres	Percent
Forest land:		
Commercial	511,400	35
Noncommercial[2]	600	(3/)
All forest land	512,000	35
Nonforest land	946,600	65
All land[4]	1,458,600	100

[1]See Appendix for definitions.

[2]Includes 550 acres in the Chenango Falls State Park and 5 acres in a municipal picnic area, which are reserved from timber cutting. State ownership figures are as of September 30, 1952.

[3]Less than 1 percent.

[4]Census of Agriculture, 1950. Water areas of 1 to 40 acres are included in the estimate of nonforest acreage.

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Table 2.--Land area and commercial forest-land area by county, 1950

County	Land area	Commercial forest-land area	
	Acres	Acres	Percent
Broome	454,400	1/ 179,400	39
Chenango	581,100	217,400	37
Madison	423,100	114,600	27
All	1,458,600	511,400	35

1/ Sampling errors and differences in definitions prevent any close comparison of this estimate with others previously published. For a more intensive survey of Broome County, see:

Davis, James E., Ferree, Miles J., and Stout, Neil J. Forest resources of Broome County. N. Y. State Col. Forestry (Syracuse), Forest Land Use Study Rpt. 3. 34 pp. 1952.

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Table 3.--Commercial forest-land area by ownership, 1950

Ownership class	Acreage held	
	Acres	Percent
Private:		
Farm forest land[1]	227,100	45
Other private	175,400	34
Total private	402,500	79
Public:		
State[2]	103,800	20
County	2,000	(3/)
Municipal	500	(3/)
Federal	2,600	1
Total public	108,900	21
All ownerships	511,400	100

[1]Census of Agriculture, 1950.

[2]Includes commercial forest land administered by the New York State Conservation Department as State Forests and Game Management Areas, amounting to 91,829.12 and 11,660.00 acres respectively. All State ownership figures are as of September 30, 1952.

[3]Less than 1 percent.

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Table 4.--Commercial forest-land area by forest type, 1950

Forest type	Area	
	Acres	Percent
White pine	57,200	11
Hemlock	38,900	8
Other softwood types	22,800	4
Sugar maple-beech-yellow birch	273,300	54
Oak types[1]	68,600	13
Other hardwood types[2]	50,600	10
All types	511,400	100

[1]Includes 32,000 acres of oak-white pine type and 25,900 acres of red oak type.

[2]Includes 31,600 acres of ash-elm-maple type and 19,000 acres of aspen type.

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Table 5.--Commercial forest-land area by forest-type group and stand-size class, 1950

Forest-type group	Saw-timber stands	Pole-timber stands	Seedling-and-sapling stands and other areas	Total area
	Acres	Acres	Acres	Acres
White pine	11,700	25,100	20,400	57,200
Other softwood types[1]	27,000	20,400	14,300	61,700
Sugar maple-beech-yellow birch	112,600	136,500	24,200	273,300
Oak types	13,600	30,900	24,100	68,600
Other hardwood types	5,100	19,800	25,700	50,600
All types	170,000	232,700	108,700	511,400
Percent	33	46	21	100

[1]Includes hemlock type (38,900 acres).

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Table 6.--Commercial forest-land area by stand-size class and watershed, 1950

Stand-size class	Watershed		Total
	Susquehanna River	Other[1]	
	Acres	Acres	Acres
Sawtimber stands:			
More than 5,000 board feet per acre	34,000	10,900	44,900
1,500 to 5,000 board feet per acre	98,200	26,900	125,100
Poletimber stands:			
More than 600 cubic feet per acre	117,900	22,500	140,400
200 to 600 cubic feet per acre	83,200	9,100	92,300
Other[2]	100,300	8,400	108,700
Total	433,600	77,800	511,400
Percent	85	15	100

[1]Includes Delaware River (39,600 acres) and Lake Ontario tributaries (38,200 acres).

[2]About half the total acreage is poorly stocked (less than 40 percent) or nonstocked.

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Table 7.--Net volume of live timber on commercial forest land by species, 1950

Species	Growing stock[1]		Saw timber[2]
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
Hemlock	40,400	505,000	102,700
White pine	35,000	437,500	71,400
Other softwoods	2,200	27,500	600
All softwoods	77,600	970,000	174,700
Sugar maple	72,900	911,200	202,700
Beech	42,500	531,200	112,000
Red maple	65,000	812,500	97,300
Basswood	12,700	158,800	48,000
White oak	11,200	140,000	32,300
Red oak	21,700	271,300	31,500
Elm	10,300	128,700	28,500
White ash	14,600	182,500	23,600
Yellow birch	16,500	206,300	10,500
Black cherry	5,000	62,500	21,600
Other hardwoods	22,700	283,700	26,300
All hardwoods	295,100	3,688,700	634,300
All species[3]	372,700	4,658,700	809,000

[1]Includes sawtimber. Cord equivalent in rough standard cords is assumed to average 80 cubic feet of peeled wood.

[2]Log scale, International $\frac{1}{4}$-inch rule.

[3]Excludes the net volume of cull trees--7,400,000 cubic feet.

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Table 8.--Net volume of live timber on commercial forest land by diameter class, 1950

Diameter class[1] (in inches at breast height)	Growing stock	Saw-timber
	Thousand cu.ft.	Thousand bd.ft.
Softwoods:		
6	17,100	--
8	17,800	--
10	14,200	50,600
12	9,500	37,400
14	7,000	28,700
16	2,200	10,700
18 +	9,800	47,300
All softwoods	77,600	174,700
Hardwoods:		
6	45,900	--
8	59,700	--
10	60,500	--
12	33,200	136,300
14	31,000	141,800
16	22,600	114,300
18	16,600	92,300
20	14,000	81,000
22	7,500	43,800
24	1,100	6,600
26 +	3,000	18,200
All hardwoods	295,100	634,300
Total	372,700	809,000

[1]The midpoint of each 2-inch diameter class is indicated.

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Table 9.--Net volume of live timber on commercial forest land by forest type, 1950

Forest type	Growing stock		Saw-timber
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
White pine	31,600	395,000	47,400
Hemlock	39,800	497,500	112,800
Other softwood types	5,900	73,800	7,900
Sugar maple-beech-yellow birch	238,700	2,983,700	556,100
Oak types	44,900	561,200	69,700
Other hardwood types	11,800	147,500	15,100
All types	372,700	4,658,700	809,000

Table 10.--Average net volume of live timber per acre of commercial forest land, by stand-size class, 1950

Stand-size class (and acreage of each class)	Growing stock	Sawtimber
	Cubic feet	Board feet
Sawtimber stands:		
More than 5,000 bd.ft. per acre (44,900 acres)	1,600	6,700
1,500 to 5,000 bd.ft. per acre (125,100 acres)	1,300	3,300
Poletimber stands:		
More than 600 cu.ft. per acre (140,400 acres)	800	500
200 to 600 cu.ft. per acre (92,300 acres)	300	200
Other[1] (108,700 acres)	30	10
Average, all classes[2] (511,400 acres)	730	1,580

[1] Includes seedling-and-sapling stands and non-stocked areas.

[2] Hardwoods constitute 78 percent of the total board-foot volume or 79 percent of the total cubic-foot volume in all stand-size classes. The average cubic volume in all stand-size classes is equivalent to 9 cords per acre.

APPENDIX

DEFINITIONS OF TERMS

Forest Areas

Forest-land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked are excluded.)

Commercial forest-land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest-land area.--Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions.

Forest Types

Forest types are classified according to the species or species group that accounts for the major portion of the stand in terms of cubic feet in sawtimber and poletimber stands, or the number of stems in seedling-and-sapling stands.

Stand-Size Classes

Sawtimber stands.--Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$-inch rule.

Poletimber stands.--Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches and larger) trees, and with at least half the minimum stocking in poletimber trees. (Poletimber stands carry at least 200 cubic feet per acre.)

Seedling-and-sapling stands.--Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling-and-sapling trees.

Other areas.--Forest-land areas not qualifying as sawtimber, poletimber, or seedling-and-sapling stands. (Includes nonstocked areas.)

Tree Classes

Sawtimber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by regional practice and that are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate net volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6.0 inches in diameter inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8.0 inches in diameter inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timbers, or ties.)

Poletimber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for sawtimber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make sawtimber trees eventually.)

Seedling-and-sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull trees.--Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Timber Volume

Growing stock.--Net volume, in cubic feet, of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

This volume is also given in rough standard cords (bark included). Cord volume is derived from growing stock by applying a factor of 80 cubic feet per cord.

Live sawtimber volume.--Net volume in board feet, International ¼-inch rule, of live sawtimber trees.

FOREST-SURVEY METHODS

These forest statistics are based on information gathered from aerial photographs and from sample plots examined on the ground.

First, photo-interpretation plots were marked off on the aerial photographs. These plots were distributed uniformly by mechanical means over photographs of the entire district. Trained photo-interpreters then classified each photo-plot as either forest or nonforest. Forest plots were classified further according to stand-size and forest type.

Field crews inspected some of the photo-plots on the ground. Enough plots were selected at random so as to attain a specified level of statistical accuracy. Species and volume data were collected on these ground plots; and the photo classification of stand size and forest type was verified or--if necessary--changed.

The survey was designed for maximum efficiency in estimating total cubic volume to meet the national standards of accuracy.

ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error. First, photo-interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or record-

ing. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this sampling error can be measured. In Forest District No. 2 the probabilities are 2 out of 3 that the actual forest area is within ± 4.7 percent of the estimated forest area, that the actual cubic-foot volume is within ± 7.2 percent of the estimated cubic-foot volume, and that the actual board-foot volume is within ± 11.7 percent of the estimated board-foot volume. This does not include any mistakes in measurement or classification.

These percentages show that the area estimates are more accurate than the volume estimates, and that the cubic-foot estimates are more accurate than the board-foot estimates.

In each of the tables, the total figures are more accurate than the subtotals. The subtotals are more accurate than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

SPECIES TALLIED

The various commercial tree species tallied in New York Forest District No. 2 are listed below. Approved common names[2] are shown in parentheses if these differ from the brief name used in the tables. Other tree species may occur in the area, but unless they were tallied on the field plots they were not included in the following list.

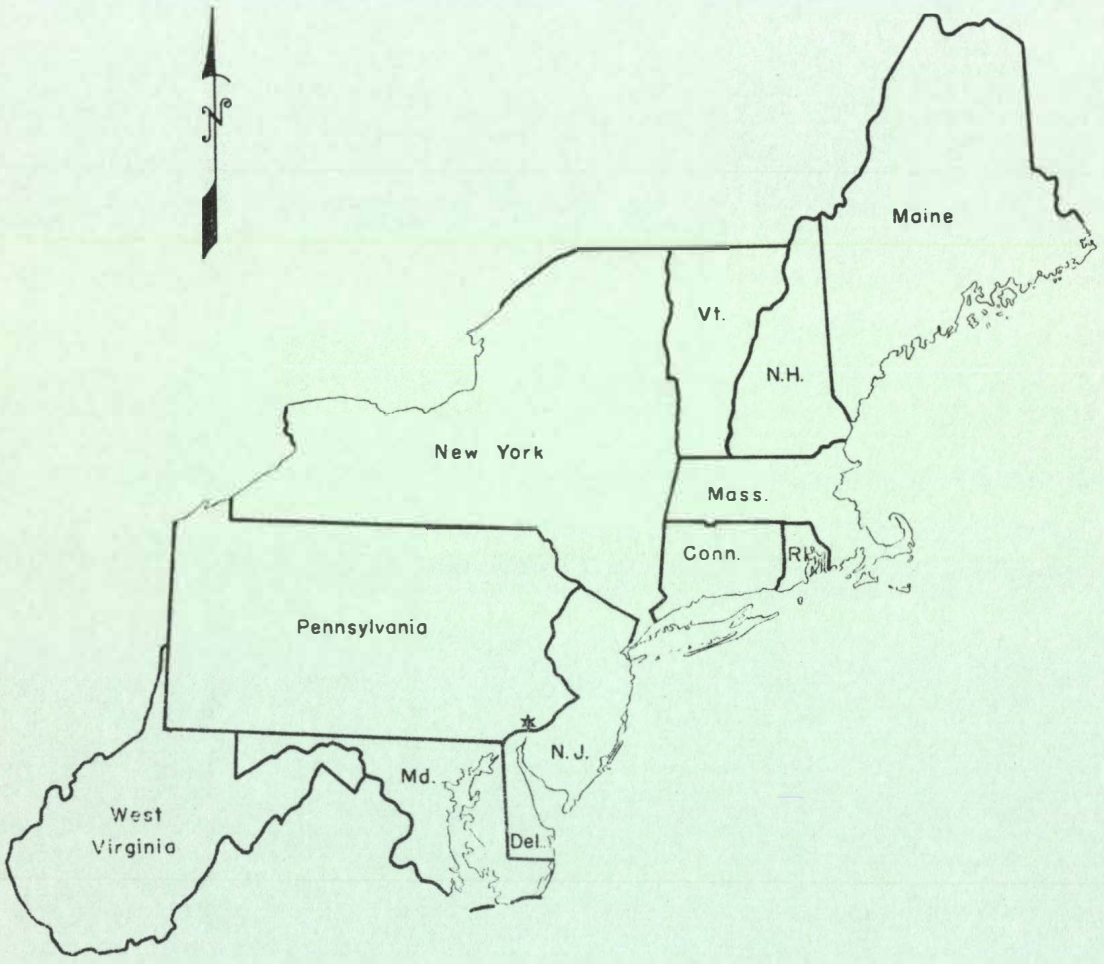
Softwoods

Hemlock (Eastern hemlock)	- Tsuga canadensis
White pine (Eastern white pine)	- Pinus strobus
(Red pine)	- Pinus resinosa
Other softwoods	
(Tamarack)	- Larix laricina
(Northern white-cedar)	- Thuja occidentalis
(Pitch pine)	- Pinus rigida

[2] LITTLE, ELBERT L., JR. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U. S. DEPT. AGR., AGR. HANDB. 41. 472 PP. 1953.

Hardwoods

Sugar maple	- Acer saccharum
Beech (American beech)	- Fagus grandifolia
Red maple	- Acer rubrum
Red oak (Northern red oak)	- Quercus rubra
(Scarlet oak)	- Quercus coccinea
Basswood (American basswood)	- Tilia americana
White oak	- Quercus alba
White ash	- Fraxinus americana
Elm	- Ulmus species
Yellow birch	- Betula alleghaniensis
Black cherry	- Prunus serotina
Other hardwoods	
(Aspen)	- Populus species
(Chestnut oak)	- Quercus prinus
(Hickory)	- Carya species
(Butternut)	- Juglans cinera
(Sweet birch)	- Betula lenta
(Black walnut)	- Juglans nigra



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